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ABSTRACT

This paper presents and discusses some stylised facts of the corporate sector financial structure in Turkey using the Company Sector Accounts compiled by the Central Bank of the Republic of Turkey (CBRT). The findings of the paper suggest that non-financial firms in Turkey have been heavily exposed almost all of the basic balance sheet risks. The corporate sector appears to be excessively leveraged with relatively lower asset tangibility creating also a credit risk for the lenders. The firms rely heavily on foreign currency denominated and short-term debt instruments making them vulnerable to both exchange rate and interest rate shocks through currency and maturity mismatches. The corporate sector can be characterised as financially constrained as the deepening of the Turkish bank-based financial system is rather low and the bank credits to the private sector tend to be crowded out by the mode of domestic debt finance. The corporate sector vulnerabilities to maturity, interest rate and currency risks are found to be improving with the firm size. With the relatively stable macroeconomic environment and stricter prudential regulation on the financial system, the corporate sector balance sheet risks, albeit still are at high levels, tend to be improving after the financial crisis of 2001.

Keywords: Balance sheets**,** Capital structure, Corporate sector, Debt composition, Financial crowding-out, Liability dollarisation, Turkey

JEL Classification: E22, F31, G32

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I. Introduction

The structures of the balance sheets of the main sectors (public, commercial banking, non-financial corporate and households) of an economy are crucially important for financial stability, sustainable growth and the channels through which monetary policy is transmitted. The recent balance sheet approach to financial crisis literature such as Krugman (1999), Allen *et al.* (2002) and Aghion *et al.* (2004) stress the roles of balance sheet vulnerabilities resulting from the level, currency composition and maturity of debt of the main economic sectors in triggering and determining the output cost of a crisis. In the same vein, credit channels of the monetary policy transmission mechanisms focus on the balance sheets of lenders (bank lending channel) and borrowers (balance sheet channel). Given the fact that the balance sheets of all the main sectors of an economy are interrelated and a risk accumulated in one sector can have serious repercussions on the others, the insights offered by the alternative approaches may be interpreted as complementary rather than mutually exclusive.

In this paper we consider the balance sheets of the non-financial firms[2] in Turkey. The conventional wisdom assuming perfect frictionless markets suggests that firms' real decisions are invariant to both their balance sheet structures and nominal changes in the economy (Modigliani and Miller, 1958). The credit channel literature, however, considers capital market imperfections (due to asymmetric information in form of moral hazard and adverse selection, agency costs etc.) and provides two complementary channels where the financial positions of non-financial firms matter for their real economic activity (Bernanke *et al*., 1999 and Gertler *et al*., 2003). First channel which is known as the bank lending, focuses on the asset side of the bank's balance sheets and discusses the impact of changes in credit conditions on the investment/spending decisions of borrowers (firms). The second channel that is usually named as the balance sheet channel, focuses more on the balance sheets of borrowers rather than those of lenders in case of change in monetary policy stance which matters for finance costs and thus real activity of borrowers. In essence, the two channels may be expected to be interrelated, amplifying the effect of a shock on the economy as suggested by the

[2] We use non-financial firms and corporate sector (firms) interchangeably

financial accelerator mechanism (Gertler *et al*., 2003). The magnitude of the amplification, in turn, depends on the sensitivities of firms' balance sheets to monetary, financial and real shocks.

The degree of the sensitivities of corporate sector to shocks is associated with their capital structure, and the level, currency composition and maturity of their debt. Indebtedness and poor collateral position make firms more vulnerable to interest rate shocks and deepen the output cost of a financial crisis. Short-term debt, on the other hand, can amplify the interest rate risk by creating a rollover risk. Financial positions of firms are closely associated with the currency composition of their balance sheets and sensitivity of their net worth to real exchange rate fluctuations. Liability dollarisation can make firms earning mainly in domestic currency vulnerable to currency mismatch risk and real exchange rate depreciations. The financial structures of firms in a country may not be invariant to the prevailing institutional structure and the level of financial intermediation. The corporate sectors of countries with relatively weak financial intermediation can be expected to rely more on internal funds and bank lending than those of the countries with developed securities markets allowing firms also bond financing (Davis and Stone, 2004 and IMF, 2005). The firms in relatively less efficient financial systems can be expected to use more trade credits due to an informational asymmetry. The finance constraint, the magnitude of which can be more severe with a lower level of financial intermediation, may be varying across firm groupings with different size (Beck *et al*., 2005a). Beside the level of financial deepening, the public sector domestic debt finance via the domestic banking system can lead a decrease in the banking system preference to finance corporate sector (financial crowding-out) and thus can make the non-financial firms to be severely bank-credit constraint.

In this paper we first present some stylised facts of the non-financial firms' liability structure in Turkey using the Company Sector Accounts compiled by the Central Bank of the Republic of Turkey (CBRT)[3]. To this end, we focus on the basic

[3] We restrict our sample to non-financial firms as the behaviour and capital structure of banks under financial regulation are not comparable with those of non-financial firms. The CBRT Company Sector database covers a wide range of information for around 8000 firms annually after 1990. The CBRT website "www.tcmb.gov.tr" provides detailed information on the database and sectoral data for the years after 1997.

sources of vulnerabilities including the level, maturity structure and currency composition of the debt. The capital structure literature often focuses on the liability side of corporate sector balance sheets and ignores the possibility that firms also can hedge themselves. Furthermore, non-financial firms can even behave as financial intermediaries under a low level of financial development, macroeconomic instability and the consequent uncertainty. Examples for the financial intermediation of non-financial firms may include their heavy reliance on trade credits and holdings of financial assets including government debt instruments and foreign exchange denominated assets to hedge against interest rate and exchange rate shocks, respectively. Therefore, we consider also the firms' assets and income statements and discuss the stylised facts of their hedging behaviour using the relevant available information from the corporate sector accounts.

The plan for the rest of the paper is as follows. In section II, we provide some key corporate finance indicators in Turkey and compare them with those of groups of industrial and developing countries. Section II.1 presents some evidence concerning firms' indebtedness and collateral base to assess their financial positions and constraints. In II.2 we consider the composition of corporate sector liabilities and assess the roles of trade credits and bank lending in the context of the level of financial intermediation and the classification of financial systems as "bank" or "market" based. Section II.3 focuses on bank loans and stresses on the low levels of financial deepening and the banking system preference to finance corporate sector in leading the firms to be severely bank-credit constraint in Turkey. The maturity, interest rate and currency risks of the corporate sector are discussed in Section II.4. In II.4.1 we consider the maturity structure of the debts and interest coverage ratios of the corporate sector firms. The currency composition of the debt and the corporate sector liability dollarisation are discussed in Section II.4.2. Section II.5 presents the evolution of the basic balance sheet fragilities (debt level, maturity structure, liability dollarisation and interest coverage risk) before, during and after the 2001 financial crisis. Section III is devoted to the discussion of the financial asset holding behaviour of the non-financial firms using the relevant available information from their assets and income statements. Government domestic debt finance can alleviate or relax the firms' financial constraints by draining

the available resources in the economy or by providing liquidity services, respectively. In section III.1, we argue that these affects may not be invariant to both the degree of financial deepening and the level and mode of government debt finance. In Section III.2, we discuss the financial asset holdings of the firms not only in the context of the conventional transactions/precautionary motives for liquidity but also considering potential precautionary-cum-speculative motive under uncertainty which can lead the allocation of assets into financial and real investments to be substitutes. Finally, Section IV concludes.

II. Corporate Sector Financial Vulnerabilities in Turkey

Excessive debt and weak liability structure are often defined among the major sources of corporate sector vulnerabilities. Table 1 reports some key corporate balance sheet indicators for groups of developed, emerging market and small industrial countries along with Turkey. The Turkish corporate sector appears to have the highest leverage ratio (measured as debt over total assets) among all the country groups before 2004 as suggested by the lowest share of shareholders equity in total liabilities. The leverage ratio (LR) appears to improve considerably and decreases to a level close to those for small industrial countries in 2004. According to the figures, the Turkish firms rely least on bond or bank finance and most on trade credits among all the country groups suggesting a relatively low level of financial intermediation. The Turkish firms, on the other hand, have the lowest asset tangibility and the highest debt ratio potentially suggesting a corporate finance puzzle. Profitability of the Turkish firms, which declined sharply with the financial crisis of 2001, appears to be somewhat between that of the developed and emerging market countries. The liquidity ratio is closer to that of the industrial countries and substantially lower than the group of emerging market countries. Given the fact that the bulk of the Turkish corporate sector debt is short-term (see below) in contrast to the industrial countries, such a liquidity ratio may be interpreted as relatively low to offset the firms' greater vulnerability to shocks. During most of the period the opportunity cost of remaining liquid by holding Turkish lira (TL) cash was extremely high under the sustained high inflation rates. However, as argued in Section III.2, the salient features of the Turkish financial system allowed the firms to

remain relatively liquid by holding short-term and often foreign currency denominated assets also for precautionary and transactions purposes. In the following subsections we proceed with the discussion of the main balance sheet vulnerabilities of the Turkish non-financial firms in more detail.

Table 1: Some Key Balance Sheet Indicators across Country Groups and Turkey

	Shares of Corporate Liabilities				Asset Tangibility[5]	Profitability (ROA)[4]	Liquidity Ratio
	Bank Loans	Bonds	Own Funds and Equity	Trade Credits[2]			
G-7 Countries[1]	0.23	0.08	0.63	0.06	0.45[3]	3.39[3]	0.21
Germany[1]	0.53	0.02	0.42	0.03	0.41	3.88	0.26
UK[1]	0.23	0.08	0.64	0.06			0.27
Small Industrial Countries[1]	0.30	0.04	0.57	0.08			0.26
Emerging Markets[1]	0.27	0.21[6]	0.40	0.14	0.68	7.88	0.42
Turkey (2000) All NF Firms	0.26	000	0.34	0.40 (0.19)	0.25	2.67	0.26[5]
Turkey (2000) Manuf. Industry	0.26	0.00	0.36	0.38 (0.20)	0.27	3.80	0.21[5]
Turkey (2001) All NF Firms	0.30	0.00	0.29	0.41 (0.19)	0.24	2.20	0.24[5]
Turkey (2001) Manuf. Industry	0.25	0.00	0.35	0.40 (0.21)	0.25	2.60	0.19[5]
Turkey (2004) All NF Firms	0.17	0.00	0.51	0.32 (0.14)	0.28	4.00	0.22[5]
Turkey (2004) Manuf. Industry	0.18	0.00	0.53	0.30 (0.18)	0.31	4.60	0.19[5]

Notes: 1. 1999 or latest year, source Davis and Stone (2004). 2. The trade credits include also the "other credits", the values in parentheses give the ratio of pure trade credits for the Turkish corporate sector. 3. For the G-3 countries. 4. Source IMF (2005a) for all the countries except Turkey. 5. Liquidity Ratio (Cash Ratio) = (Liquid Assets + Marketable Securities)/ Short-term Liabilities. 6. Davis and Stone (2004, p. 70) note that, this high share is due to the large share of bond financing in Korea dominating the small sample. Sources: CBRT Company Sector Accounts, Davis and Stone (2004), IMF (2005a) and our calculations.

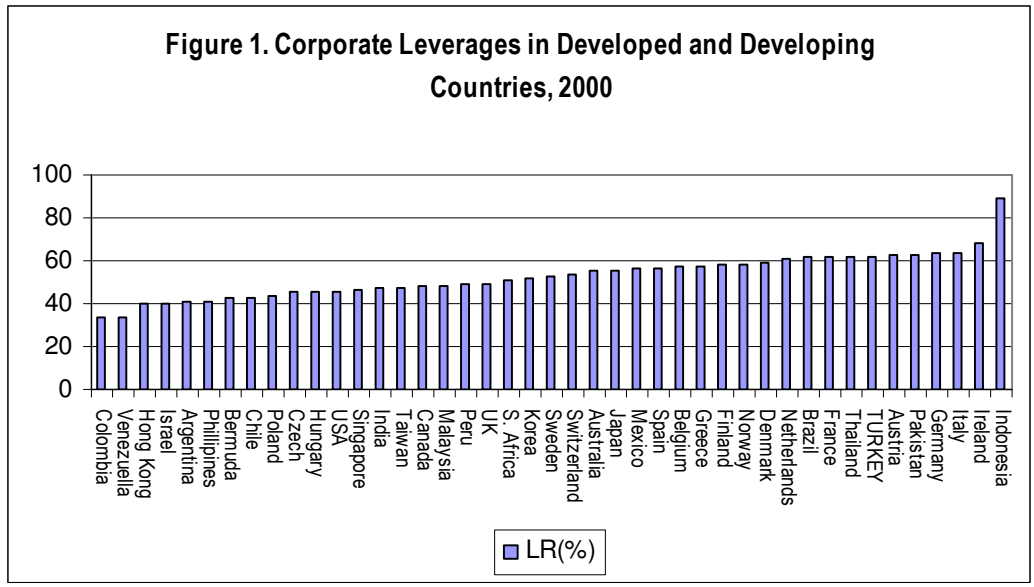
II.1. Leverage Ratios

Glen and Singh (2003) compute the average leverage ratios (LRs) for developing and developed countries in the period of 1994-2000 as 56.4% and 52.6%, respectively. Consistent with the findings of Fan, Titman and Twite (2004), Davis and Stone (2004) and IMF (2005a), developing country firms appear to have slightly higher LRs. This may be a plausible result as financial development can lead firms to move away from loan financing (bank and trade credits) towards market financing securities and internal

equity. However, such an interpretation ignores the fact that financial structures may differ even between countries with compatible financial development levels. For an international comparison, Figure 1 plots the LRs for the year 2000 provided by Glen and Singh (2003). From the figure, it can be inferred that LRs vary substantially across countries as well as within country groups. Although the overall picture from Table 1 may lend a support to the view that "the share of corporate liabilities accounted for by loans is decreasing in the level of economic development" (Davis and Stone, 2004, p. 69), it also calls for a caution as bank based (Germany) and market based (USA and UK) systems have substantially different firm debt levels albeit belonging to the same developed country grouping[4]. These results, however, may imply that firms in developed countries are expected generally to be less financially constrained and less likely subject to informational problems and agency costs. These firms prefer mostly retained earnings and direct finance that are cheaper than bank finance to satisfy a large portion of their financial needs (Myers and Majluf, 1984).

The Turkish firms are amongst the most indebted as also suggested by Figure 1. A similar picture arises when we consider the debt–equity ratio (Table 1). The high level of LRs can be a potential source of risk, as higher indebtedness increases the premium that has to be paid on external finance, and, thus can potentially affect investment adversely. High LRs can also be an indicator of the vulnerability of corporations to macroeconomic shocks as recently suggested by the Asian crisis (Ratha *et al.,* 2003 and Davis and Stone, 2004).

[4] See Allen, Chui and Maddaloni (2004), Byrne and Davis (2004) and IMF (2005) for recent comparisons of bank-based and market-based financial systems. According to Byrne and Davis (2004) there is some evidence of convergence towards a more market-oriented system in the major European Union countries during the 1990s. According to IMF (2005, p. 125) "there is no evidence that market-based systems, or bank-based systems, are associated with better economic performance". IMF (2005, p.95) further notes that "despite the increasing importance of domestic and international bonds as a source of corporate finance, *bank lending* remains the dominant source of corporate finance for all emerging market regions".



Source: Glen and Singh (2003).

Figure 2 reports the LRs of the firms during the 1990-2004 period. The manufacturing firms classified as large appear to have smaller leverage ratios compared to small and medium size firms during the period. [5] Large firms tend to finance their activity through non-debt finance i.e. internal funds. For the manufacturing sector, medium sized firms are generally more indebted compared to the small firms. Among non-financial (NF) firms, manufacturing (Manuf) firms on average appear to be less indebted. Large manufacturing firms have generally relied more on internal finance compared to small and medium sized firms especially during expansionary periods as these firms are less likely to be financially constrained and they prefer the cheapest source of finance - retained earnings - to finance their investment in these times (Figure 3). However, the share of external finance, mainly debt, increased relatively during the recessionary periods of 1999 and 2001 because of either squeezing of their retained earnings or shifting to bank finance that is more suitable option for them in these times. On the other hand, smaller firms are more likely to be financially constrained and they rely more on external finance in general even though they have less access to bank

[5] Consistent with the BACH (The Bank of Harmonised Data on Company Accounts) scheme, we classified the firms as small if their sample means of net sales are not larger than EUR 7 millions. The firms with sample means of net sales are larger than EUR 40 millions are classified as large whilst the rest apparently constituting the medium sized firms.

finance compared to larger firms during recessions. In fact, banks are expected to ration the credits and thus they do not want to provide funds to small firms with poor collateral, instead they prefer collaterally rich large firms during the economic slowdown (Gertler and Gilchrist, 1994). Accordingly, the LRs of small firms expected to be more pro-cyclical compared to those of large firms. However, figures for the small firms do not confirm this hypothesis in Turkey. The pro-cyclicality of the LRs and thus investments arguments clearly do not consider the fact that potentially constrained firms (especially small firms) had access to trade credits during recessions. As will be discussed later in more details, substantially large share of trade credits especially for small and medium sized firms may be interpreted as a buffer providing them some chance of avoiding the negative impacts of the finance constraint, and thus smoothing out the pro-cyclical behaviours of their real and financial activity during recessions.

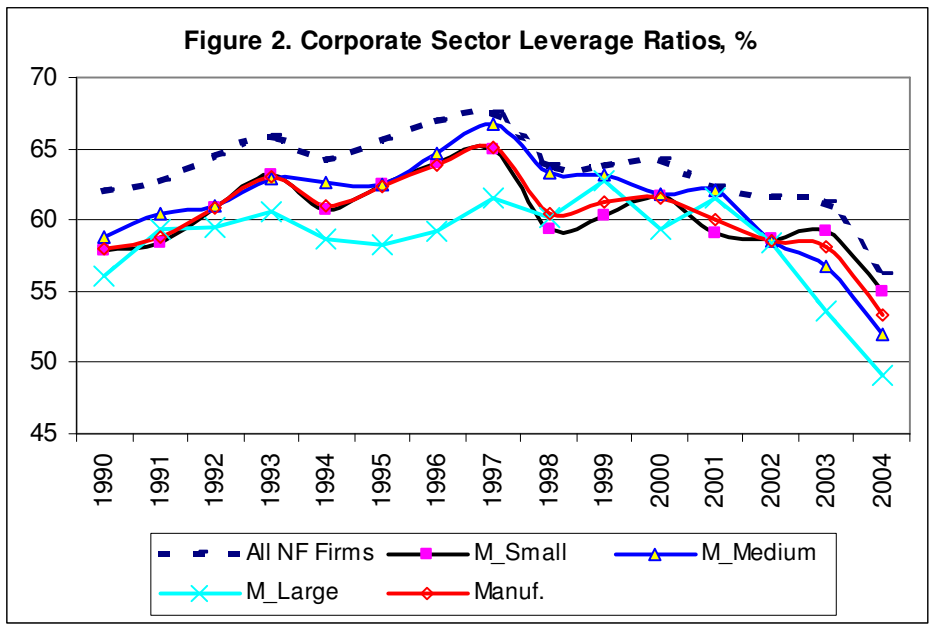
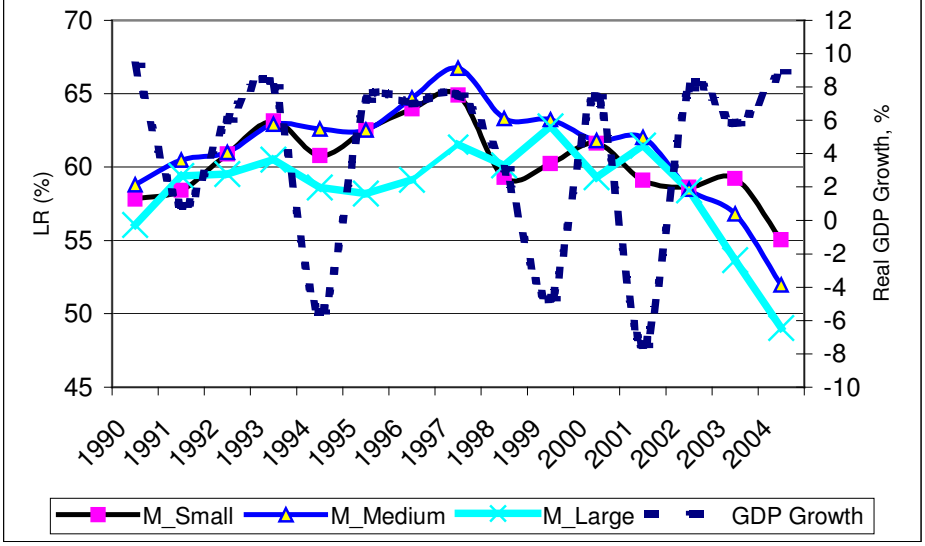
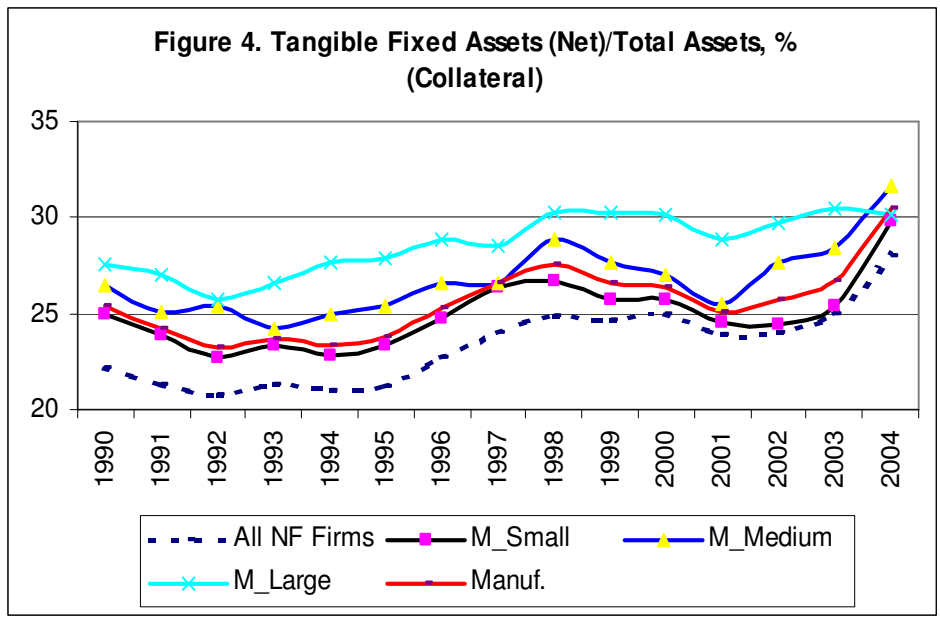


Figure 3. Real GDP Growth and Manufacturing Sector LRs



A striking result that can be inferred from Figures 2 and 3 is that the leverage ratios for all the sectors tend to decline substantially after the financial crisis of 2001. This may be consistent with a view that the Turkish corporate firms, which were severely hit by the crisis due to their vulnerabilities including very high debt levels, became more prudent about external finance after the crisis. In addition, relatively stable macroeconomic environment after the crisis improved firms' investment and thus their internal funds. Consequently, the LRs came down to the levels comparable to those of the firms in industrial and small industrial countries by 2004 (Table 1). The decline in the LRs and thus the increase in the use of own funds (Own Funds/Total Assets = 1-LR) after 2001 appears to be more sharper for the large manufacturing firms compared to other firm groups. Consistent with the fact that they are the most constrained in terms of own funds, the post-crisis adjustment towards lower LRs appear to be relatively sluggish for small manufacturing firms.

Another important indicator that provides information on the corporate finance is the tangibility of firms' assets (a proxy for the collateral level of firms). Figure 4 presents the *collateral* ratios measured as the ratio of the firms' net tangible fixed assets to total assets. Collateral ratios appear to be increasing with the size of the manufacturing firms. The evidence that small manufacturing firms have the lowest collateral ratios but not the lowest leverage ratios (Figures 2 and 4) is not consistent with the argument that suggests positive association between leverage ratio and tangibility and thus firm size in the Turkish case (Fan *et al.,* 2004). As will be discussed later, the share of bank loans in total loans tends to be monotonically increasing with the firm size. It may be argued that asset tangibility is more related to bank loans rather than the leverage ratio *per se*. This may not be implausible, since the LR contains other kinds of debt including trade credits, which does not directly rely solely on the collateral.

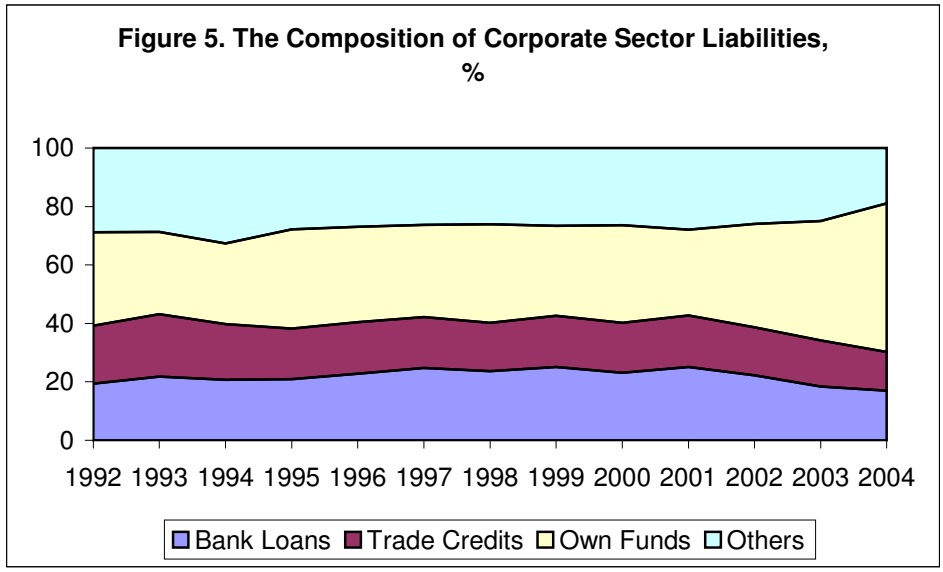


Compared to the figures in Table 1, the asset tangibility in Turkey is lower than both the emerging market and the developed countries. According to IMF (2005, p. 103) *"asset tangibility in emerging markets is 50 percent larger than in the G-3 countries, supporting a higher level of corporate leverage"*. Informational asymmetries between borrowers and lenders may decrease with higher asset tangibility. Therefore,

higher asset tangibility may allow for higher leverage. The Turkish case, with lower asset tangibility and higher leverage ratios compared internationally can be interpreted as providing a puzzle. However, when we consider the maturity and currency composition of the debt (see below), along with the already discussed fact that a substantial part of the debt is short term trade credits, the Turkish evidence may become much less puzzling. It is worth noting that the collateral positions of the Turkish corporate sector firms tend to be gradually improving after the financial crisis of 2001.

II.2. The Composition of the Corporate Sector Liabilities

Figure 5 plots the composition of corporate sector liabilities in Turkey during 1992-2004. The share of bank loans in corporate sector liabilities appears to be close to the advanced countries (G7) average (Table 1). However, such a comparison may be misleading as the G7 group contains both "market-based" (e.g. USA and UK) and "bank-based" (e.g. Germany) financial systems. Given the fact that corporate bond issuance has virtually no role in corporate sector in Turkey, the Turkish financial system may better be compared to "bank-based" systems rather than "market-based" systems. Both the composition of corporate sector liabilities (Figure 5) and the share of bank loans in total loans (Figure 6, below) show that bank loans are not the dominant source of finance in Turkey. The share of bank loans in total corporate sector liabilities fluctuates around 20 % during the period. Considering the ratios for a typical bank-based (e.g. Germany, 53 %) and a market based country with active securities markets (e.g. UK, 23%) presented in Table 1, it may be plausible to argue that bank lending to private sector in Turkey is rather limited and close to market-based systems. However, with the absence of an active and dominant corporate bond market, the Turkish firms can be interpreted as severely finance-constrained.



The share of bank loans in total corporate sector liabilities tends to decline considerably after the financial crisis of 2001. From figure 5, it may be inferred that the increase in the use of own funds (hence the decline in the LRs) after 2001 is basically due to the decline in the share of bank loans rather than the other forms of the debt including trade credits. This might be due to stricter prudential regulation on the banking system as well as firms behaving more prudent on excessive bank debt after the crisis. However, given the fact that the corporate sector already being severely bank credit constrained, such development may not be interpreted as growth enhancing especially in the absence of a well developed corporate bond market.

A striking feature of the Turkish corporate sector is the high share of trade credits in total liabilities. Demirguc-Kunt and Maksimovic (2002) claim that firms tend to use more bank loans rather than trade credits in countries with more efficient financial systems. The negative relationship between the development level and trade credit share suggested by Table 1 is consistent with an argument that trade credit is an important source of financing in economies with underdeveloped financial intermediaries. However, this argument *per se* may not be sufficient to explain substantially high share of trade credits in Turkey compared to both the emerging market and small industrial countries by the financial development levels of countries.

The presence of trade credits is often explained by information/monitoring advantage of suppliers over banks in financing constrained firms (Burkart and Ellingsen, 2004 and Davis and Stone, 2004). This information asymmetry may be expected to decrease with the level of financial development. Furthermore, suppliers having access to privileged information about their customers' creditworthiness and ability to exert corporate control more readily than banks are often entitled to seize the firm's inputs and other assets in the case of a default. This can make inputs to be considered also as collateral worthing more to the supplier who is in the same business than to the bank (Frank and Maksimovic, 1998). In this context, trade credit can be a substitute for bank credit even for firms with sufficient debt capacity.

Trade credits become more important when creditor protection is weaker (Demirgüç-Kunt and Maksimovic, 2002 and Fisman and Love, 2003) and when firms are undercapitalized (Burkart and Ellingsen, 2004). For the firms with credit constraints and low asset tangibility (collaterally poor), trade credit becomes an important complement to bank credits. Compared to the international evidence, the Turkish firms appear to be highly leveraged with lower asset tangibility (see below). The high level of debt owes much to the trade credits the share of which in total firm liabilities almost equals to the share of bank credits during the sample period (see Figure 4). The lower asset tangibility of the Turkish firms can thus be interpreted as amongst the causes of trade credit complementary to bank credit under financial constraints. The macroeconomic instability and persistent high inflation may also be interpreted among the causes of short-maturity monetary contracts including trade credits in Turkey[6]. Extensive use of trade credits can be also interpreted as evidence of informal nature of financial structure of Turkish firms. Existing institutional framework does not prevail market oriented relations in the financial system and this creates its second best solution in the form of trade credits together with some vulnerabilities that prevent to see underlying problems.

[6] Türkan (2004) claim that high taxes on financial intermediation makes bank finance expensive and thus lead to extensive use of trade credits in Turkey. Yalçın *et al.* (2005) find that small firms have the highest share of trade credits in total liabilities compared to other firm groups where large firms act as financial intermediaries.

II.3. Bank Loans

In Turkey, both the levels of financial deepening and the banking system preference to finance corporate sector are very low leading corporate sector to be severely bank-credit constraint. Figure 6 plots the 2003 values of the ratios of the private credit by deposit money banks (DMB) and other financial institutions[7] to GDP (CREDIT/GDP), private credit by DMB to GDP (BANK_CREDIT/GDP) and DMB assets to GDP (BANK_ASSET/GDP) for a large sample of developed and developing countries. The figure also plots a Bank Credit Allocation Index (BCAI) measured as the ratio of deposit money banks credits to private sector to deposit money banks assets. According to BANK_ASSET/GDP, the level of bank/financial intermediation in Turkey is relatively low[8]. The bank credit allocation index for Turkey computed as 0.35 appears to be among the least three (along with Algeria and Argentina) in a sample of 75 countries. Accordingly, only around 35% of deposit money banking system assets are allocated to corporate sector in Turkey[9]. Note that, only ten countries have BCAI lower than 0.6 and more than one-third of the countries have BCAI higher than 0.9. As will be discussed later, the extremely low level of banking system preference to finance corporate sector can be attributed to financial crowding out of government debt finance via commercial banking system in Turkey after the mid 1980s. Given the relatively low levels of financial development and banking system preference to finance corporate sector, the ratio of private credit by financial institutions to GDP (CREDIT/GDP) appears to be very low (amongst the lowest 4 in the cross country sample) in Turkey. As can be observed from the differences of the CREDIT/GDP and BANK_CREDIT/GDP values, non-bank financial institutions are also important

[7] The other financial institutions comprise banklike and nonbank financial (insurance companies, provident and pension funds, trust and custody accounts, pooled investment schemes, compulsory savings schemes) institutions. These are institutions that serve as financial intermediaries, while not incurring liabilities usable as means of payment. All the data for Figure 5 are from the World Bank *Financial Development and Structure 2005 Dataset*, See, Beck, Demirgüç-Kunt and Levine (2000) for a detailed description of the database.

[8] Note that a similar picture arises when we consider the ratio of liquid liabilities (currency plus demand and interest-bearing liabilities of banks and other financial intermediaries) to GDP which is the broadest available indicator of financial intermediation and a typical measure of financial depth (Beck *et al.* 2000).

[9] These findings are consistent with those reported in Sy (2005), Hauner (2006) and Hanson (2003) suggesting that Turkey appears to have the highest ratio of government securities in total banking system assets amongst a large number of developing and industrial countries. We discuss this issue in Section III.1 in more detail.

sources of credit to corporate sector for a number of countries including the USA, S:Arabia, Canada, Iran, Malaysia, Korea and Thailand[10]. In Turkey, the share of non-bank financial institutions in credits is somewhat negligible (5.1 %). Consequently, corporate sector in Turkey can be characterised as suffering from a general finance constraint in Turkey.

Figure 7 reports the average share of bank loans in total loans for non- financial firms. Given the fact that the corporate sector, in general, suffers from a bank credit constraint, the figure may be helpful in assessing the evolution of the share of bank finance over time and across firm groups. The share of bank loans appears to be monotonically increasing with the firm size. The figure also suggests a tendency through a general improvement in bank loans until 1997-1998. After 1998 the bank loans tend to decline until a slight improvement after 2002 with macroeconomic stability. It is worth noting that, unlike the recent 2001 financial crisis, we do not observe a severe bank credit squeeze (except for small firms in 1994 to certain extend) during and after the 1994 crisis. Compared to large firms, small and medium sized manufacturing firms appear to be somewhat more negatively affected from the worsening bank credit conditions. The overall picture suggests that the access of small sized manufacturing firms to bank finance appears to be more sensitive to general squeezes in bank credits. The observation that small firms use less bank finance is consistent with the results of Beck *et al.* (2005) based on cross-country data.

[10] Non-bank financial institutions provide 64% of private credits in the USA. Other notable countries are S. Arabia (50%), Canada (31%), Iran (29%), Malaysia (29%), Korea (24%), Thailand (20 %), Norway (20 %), Bolivia (20 %) and Chile (19%).

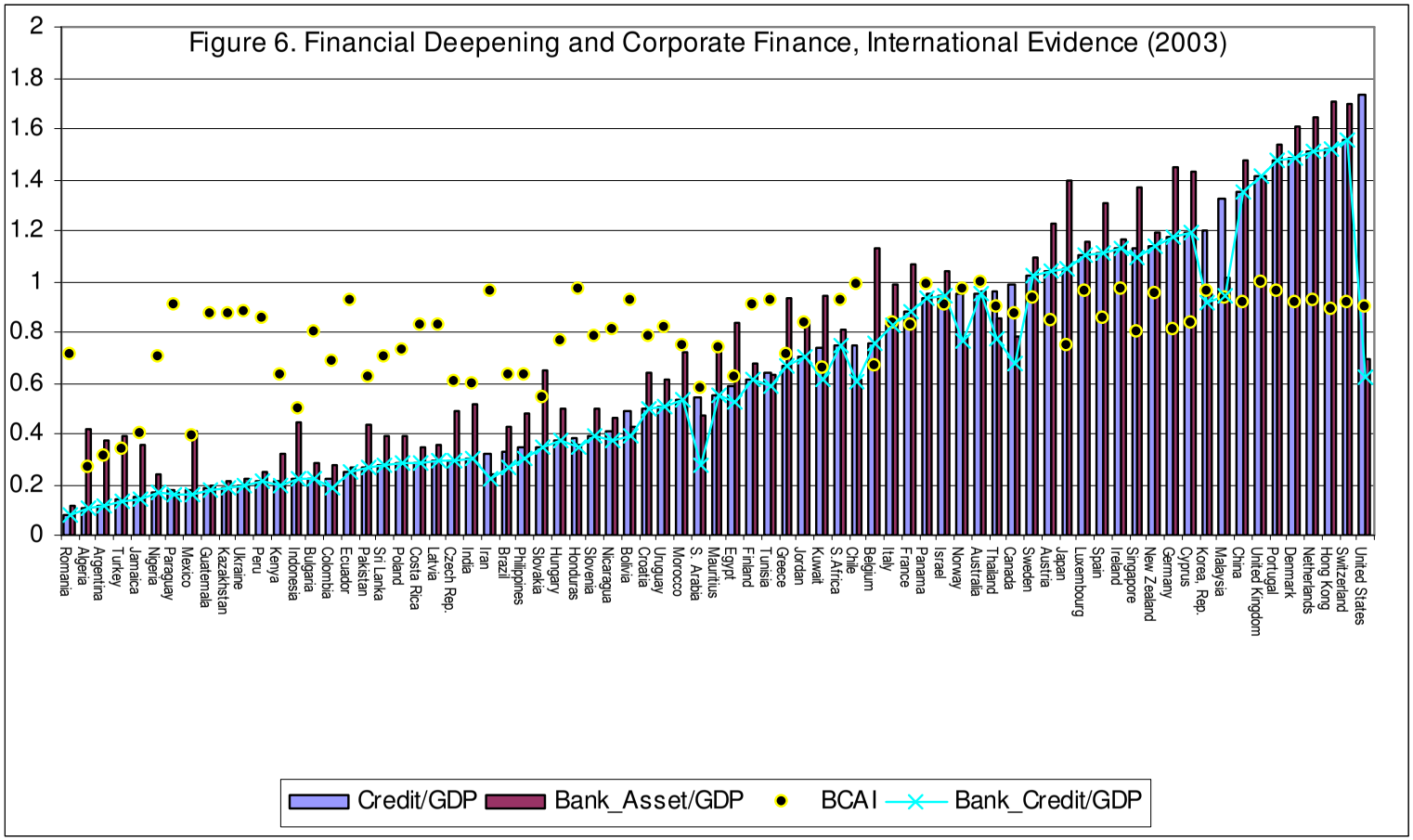


Figure 6. Financial Deepening and Corporate Finance, International Evidence (2003)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Romania
Algeria
Argentina
Turkey
Jamaica
Nigeria
Paraguay
Mexico
Guatemala
Kazakhstan
Ukraine
Peru
Kenya
Indonesia
Bulgaria
Colombia
Ecuador
Pakistan
Sri Lanka
Poland
Costa Rica
Latvia
Czech Rep.
India
Iran
Brazil
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Norway
Australia
Thailand
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Sweden
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Japan
Luxembourg
Spain
Ireland
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New Zealand
Germany
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Korea, Rep.
Malaysia
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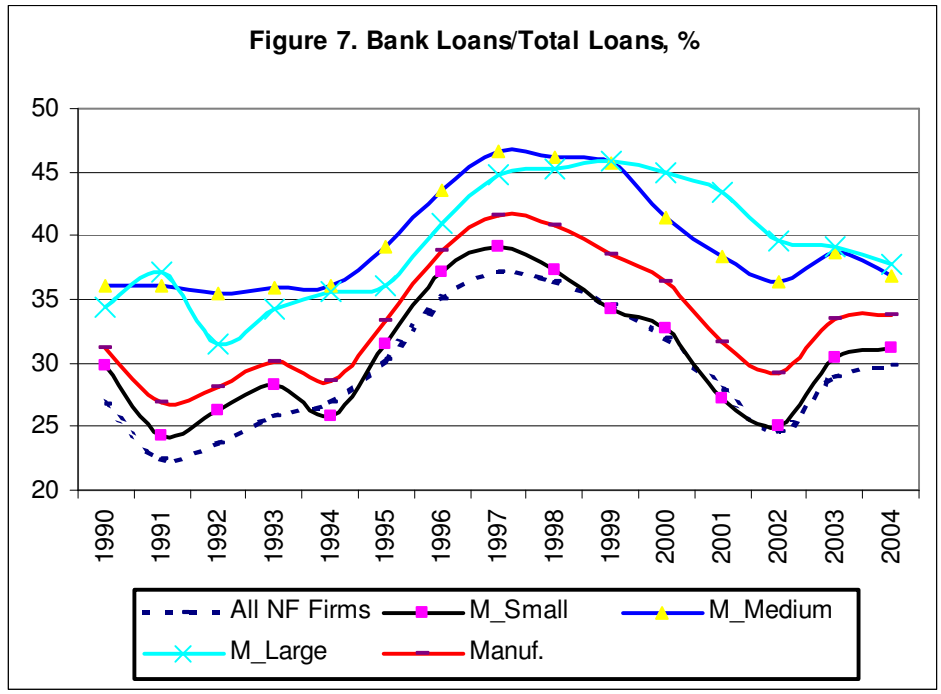


II.4. Maturity, Interest Rate and Currency Risks of the Corporate Sector

II.4.1. Maturity and Interest Rate Risks

High short-term debt may make firms be more vulnerable to insolvency and rollover risk especially in the case of an interest rate shocks as cash flow must be available for interest payments. Figure 8 presents the maturity structure of the corporate sector debt measured as the ratio of short-term liabilities to total debt. The bulk of the Turkish corporate sector debt appears to be short-term (with maturity less than a year). The corporate debt maturity tends to increase with firm size. From the figure, it may be inferred that there has been a tendency towards an improvement in the maturity structure after the mid-1990s. However, as will be discussed later, this owes much to increased liability dollarisation, which allowed firms to borrow in foreign currency with a relatively longer maturity during the period. Consistent with an argument that the debt structure of firms may not be invariant to their tangibility, firms with greater collateral can be expected obtain longer-term debt. As we have shown in Figure 4, asset tangibility increases with firm size, similarly as shown in Figure 8, debt maturity tend to increase with firm size and thus with asset tangibility.

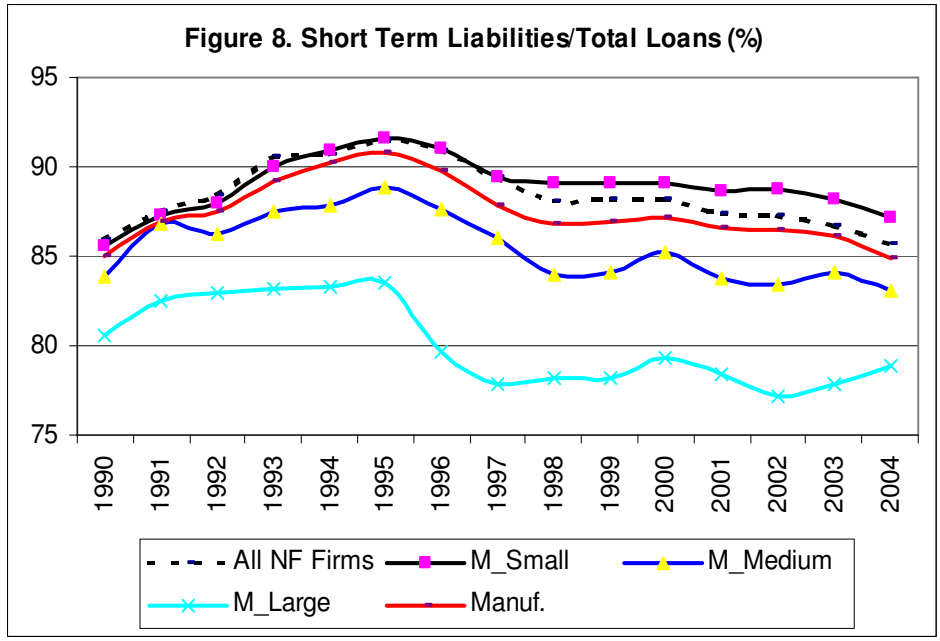
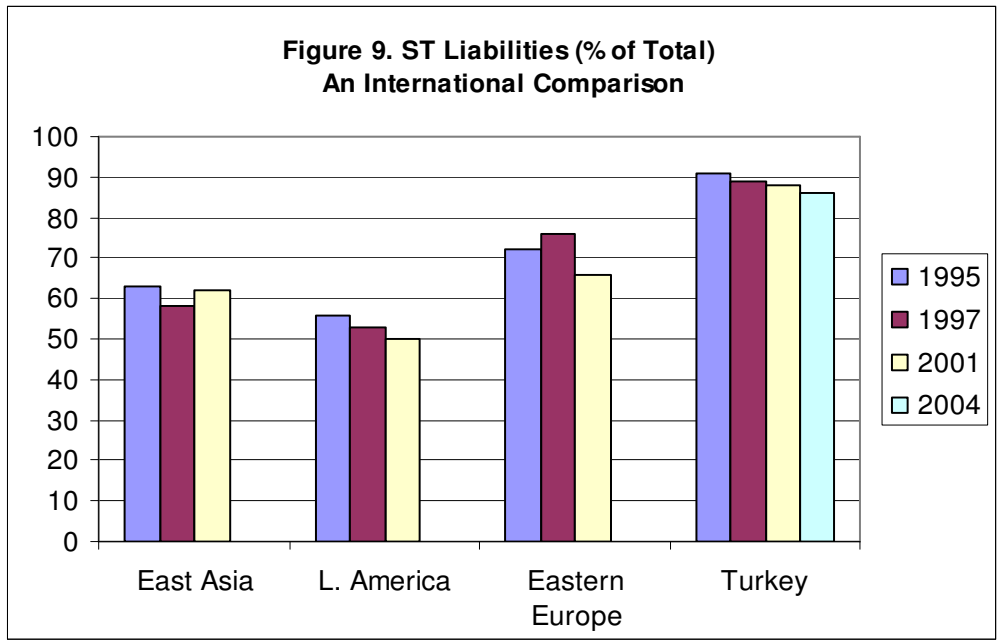


Figure 9 plots the short-term debt (ST) ratios for East Asian, Latin American and Eastern European and Turkish non-financial firms. The debt maturity of the Turkish corporate sector appears to be relatively short compared to international evidence. Based on a cross-country data for 5344 firms of 39 countries during 1991-2001, Fan *et al.* (2004) compute that the median short-term debt ratios for developing and developed economies are 65% and 45%, respectively. According to IMF (2005a, p.118), the ratio of short-term debt to total debt in percentage for "market participants" (non-participants) is 35.7 (51.7) for emerging market countries, 29.4 (44.0) for Latin America, 39.1 (51.3) for Asia and 38.5 (60.0) for Europe. In the IMF sample, Turkey has the highest short-term debt ratio (55.3 for market participants and 65.5 for non-participants) among the developing countries considered. Although the IMF (2005) figures are somewhat smaller than those in Figure 8, potentially due to the very limited sample size of IMF (2005a), the Turkish firms can be interpreted to rely more on short-term debt leading them to be more vulnerable to shocks. According to Bleakley and Cowan (2004) and IMF (2005a), the higher short-term debt ratios can lead firms to be more liquid due to the potential risks stemming from maturity mismatches. The figures in Table 1 suggest that the Turkish firms appear to have similar liquidity ratios with those of the industrial countries where the corporate sectors in these countries can borrow more in longer maturities and in terms

of their domestic currencies. Therefore, the liquidity ratio of the Turkish corporate sector firms may be interpreted as yet to offset their greater vulnerability to shocks. This may be plausible because of the high cost of remaining liquid in the face of the sustained high inflation rates during the period.[11] In Section III.2, we discuss this issue in detail in the context of non-financial firms' demand for liquid financial assets under macroeconomic uncertainty.



The relatively short maturity and high level of corporate debt in Turkey make firms be vulnerable to insolvency as cash flow must be available for interest payments. Figure 10 reports interest coverage ratio (ICR) measured as the ratio of profit before interest and tax to interest expenses. ICR can be taken as a proxy for firms' ability to service debt as debt service default risk tends to decrease with higher earnings relative to interest payments.[12] Firms with an ICR below 100% can be interpreted as being not able to generate sufficient cash flow to service their short-term debt. Note that this does not

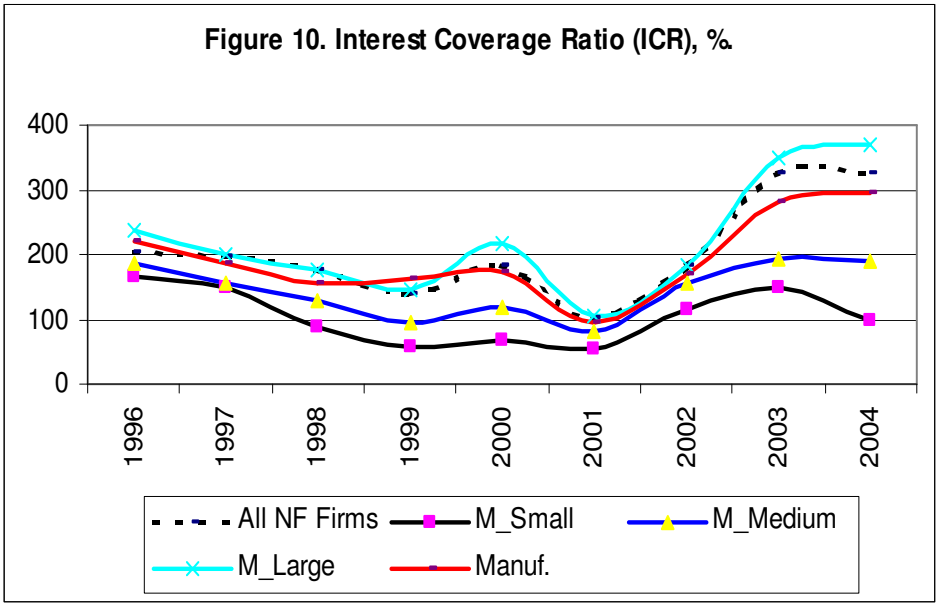
[11] Bleakley and Cowan (2004) suggest a positive relationship between short-term indebtedness and liquidity and show that while East Asian firms tended to have more short-term debt than Latin American companies, their short-term liabilities were generally matched with larger holdings of liquid assets. However, the opportunity cost of liquidity, which is ignored by Bleakley and Cowan (2004), may not be the same for the countries in the presence of substantially differing inflation rates.

[12] We consider the ICR definition of the CBRT Company Sector Accounts. See Claessens, Djankov and Nenova (2001) and Glen (2004) for alternative interest coverage ratio definitions and comparable data for a broad number of countries including Turkey.

necessarily imply a debt default as firms can temporarily use alternative sources of cash via asset sales or new security issues etc. (Glen, 2004). As a Ponzi type debt finance is not sustainable for a firm, an ICR of at least 100%, however, is ultimately needed for the solvency of a firm.

According to Figure 10 interest coverage ratios tend to improve with firm size. The ICRs for small and medium sized manufacturing industry firms were at critical levels during the financial crisis year of 2001. The small (and to a certain extend medium) sized manufacturing firms, on average, can be interpreted as being highly vulnerable to insolvency even years before the crisis potentially due to the high real interest rates during the period. The value of the ICR for large firms just being around 100% may suggest that also a sizeable number of large firms found themselves facing a debt service difficulty during 2001. All firm groups generally tend to improve their financial positions after the financial crisis of 2001. The post crisis adjustment of the non-manufacturing and large manufacturing firms appears to be remarkable. However, relatively sluggish post crisis adjustments of the small and medium sized manufacturing firms make them still highly vulnerable to interest rate shocks. With an ICR of just around 100%, the interest rate risk exposure of the small firms can be interpreted as still extremely severe by 2004.

Figure 10. Interest Coverage Ratio (ICR), %.



II.4.2. Currency Risk and Liability Dollarisation

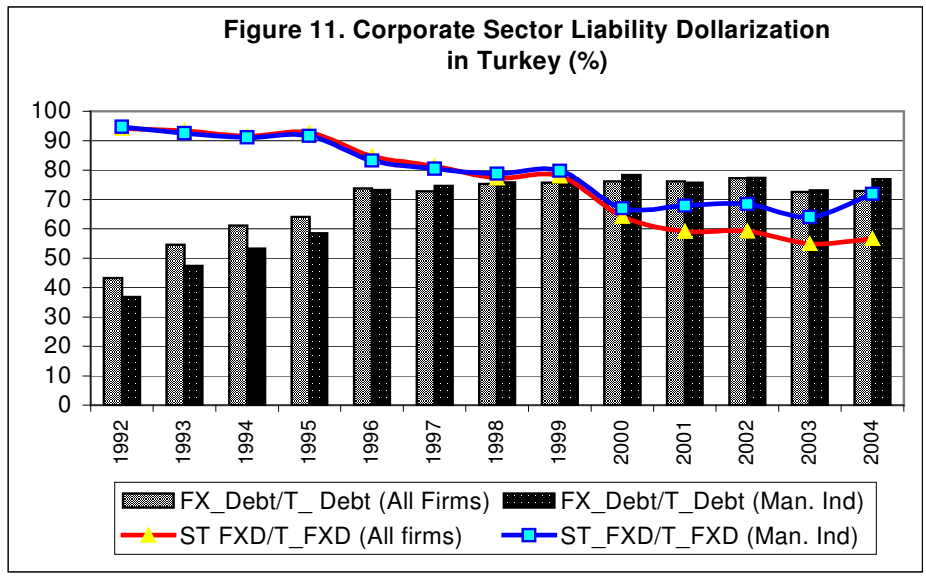
The presence of liability dollarisation can make firms financially vulnerable to external shocks through balance sheet currency/maturity mismatches and limit the scope of macroeconomic policies especially by causing "fear of floating" as widely discussed in the recent literature.[13] Furthermore, as noted by IMF (2005, p. 116) "both currency and maturity mismatches can exacerbate the impact of exogenous shocks in emerging markets, increase the severity of crises, and slow down the post crisis adjustment".[14] The financial fragility is expected to be more severe for low-exporting non-tradable firms which are highly leveraged in foreign currency debt although their revenues are primarily in domestic currency.

Figure 11 plots the ratio of foreign currency (FX) debt to total debt (FX_Debt/T_Debt) as a measure of corporate sector liability dollarisation in Turkey. The figure also presents the ratio of short-term FX debt to total FX debt as a proxy of FX debt maturity mismatch. The corporate sector liability dollarisation, which was already high in 1992, sharply increased during 1992-1996 reaching a level of around 70% in 1996. After 1996, the dollarisation ratio fluctuated slightly and reached local peaks with the implementation and collapse of the fixed exchange rate based stabilisation policy after 1999. The relative improvement of the macroeconomic conditions after 2001 appears to be effective in reducing liability dollarisation around to a level of 1996, albeit which is still a very high one. The data for 2005 are yet to be available, but the sustained and

[13] For the recent accounts, see Céspedes, Chang and Velasco (2004), Calvo, Izquierdo and Mejía (2004), Cowan, Hansen and Herrera (2005), IMF (2005) and the references cited therein.

[14] As acknowledged also by the IMF (2005, p.116) the presence of original sin (the inability of most countries to borrow internationally in their own currencies) indeed "prevents both emerging market sovereigns and corporates from issuing domestic currency debt abroad". The inability of many countries to borrow in domestic currency at long maturities and fixed rates even at home constitutes the domestic dimension of the original sin (Eichengreen, Hausmann and Panizza, 2003). An important consequence of the original sin is neatly summarized by IMF (2005, p. 116): "an emerging market firm that is unable to obtain long term funding locally faces a trade-off between financing long-term investments with short term local currency liabilities, which creates a *maturity mismatch*, or borrowing long-term in foreign currency, which creates a *currency mismatch*". The results by Özmen and Arınsoy (2005, p. 599) suggest that "flexible exchange rates and strong macroeconomic policy stance with sound institutions are necessary but not sufficient for redemption from original sin". Consequently, it may be argued that better governance and macroeconomic stability with a flexible exchange rate regime can plausably have a role in decreasing maturity and currency mismatches in developing countries.

improved macroeconomic stability during the period can plausibly be expected to yield a relatively lower level of corporate sector liability dollarisation. The bulk of the FX debt (more than 80%) appears to be short-term until 2000. The relative improvement of the FX debt maturity with the stabilisation policy of 2000 seems not to be substantially distorted even with the financial crash of 2001 potentially due to the credibility of the post-crisis stabilisation programme. Although there have been some signs of improvements, the maturity structure and especially the level of corporate sector liability dollarisation can be interpreted still as a source of concern leading firms vulnerable to external shocks.



The corporate sector liability dollarisation in Turkey can be interpreted as extremely high when compared internationally. According to IMF (2005a, p. 118), the 1999-2003 averages of the corporate sector FX debt as percentage of total debt are 33.6 for Latin America, 23.0 for Asia, 20.4 for Europe and 25.7 for all emerging market countries in the sample. The Latin American countries appear to have the highest liability dollarisation ratio. To have a better international comparison, we consider the Inter-American Development Bank (IADB) database, which is used also a basic source for IMF (2005a). The IADB database provides firm-level information for approximately 2,000 non-

financial firms from ten Latin American countries for the period of 1990–2002.[15] Figure 12 plots the liability dollarisation ratios (FX debt as a percent of total debt) for non-financial firms in the Latin America and Turkey. Turkey (along with Uruguay) appears to be amongst the most dollarised countries whilst the liability dollarisation for Colombia, Chile and Brazil can be interpreted as relatively modest.[16] The liability dollarisation tends to be relatively persistent for most of the countries during the period. Consistent with the argument in which fixed exchange rate regimes encourage dollarisation, the countries with hard pegs (Argentina) and *de facto* (Reinhart and Rogoff, 2004) crawling pegs (Bolivia, Costa Rica, Peru, Uruguay and Venezuela) are generally more dollarised compared to the countries with floating exchange rate regimes (Brazil, Chile, Colombia) over the sample period. It is worth noting that the countries with lower dollarisation ratios are also the countries enforced strict regulations on financial transactions in foreign currency (Brazil, Chile, Colombia and to a certain extent Mexico, see Singh *et al.*, 2005 Chapter VI for financial dollarisation and regulations in Latin America). Therefore, the impact of exchange rate regime inflexibility on dollarisation should better be interpreted with a caution. The Turkish experience, in this context, is more unique as corporate sector liability dollarisation has been the highest in spite of substantial shifts in exchange rate regimes over the period. This may indeed show also the importance of strong macroeconomic policy stance and price stability for an endogenous dedollarisation process (Galindo and Leiderman, 2005) along with precautionary/regulatory measures to limit vulnerabilities caused by dollarisation.[17]

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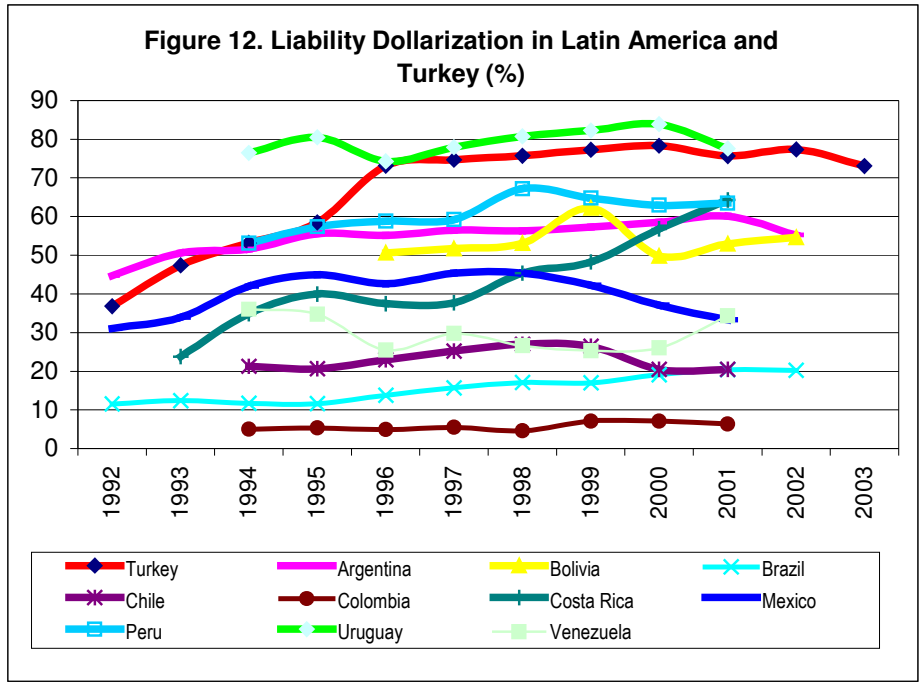
[15] See Kamil (2004) for a detailed information on the IADB database. The December (2003) issue of the *Emerging Markets Review* is entirely devoted to studies using the IADB database (see, Galindo *et al*., 2003 for a review). The database covering around 2000 firms for 10 countries is one of the most comprehensive source for firm level liability dollarisation capital structure. It is worth noting that the CBRT Company Sector database covers a wide range of information for around 8000 firms annually after 1990.

[16] Note that, as Kamil (2004) warns that the number of firms for Uruguay is very small (less than 30 for most of the years) and thus may not be clearly representative. The small sample size problem is the case also for Venezuela and Costa Rica.

[17] See Kesriyeli *et al.* (2005) for the causes and balance sheet consequences of the liability dollarisation of non-financial sectors in Turkey. The results by Kesriyeli *et al.* (2005) suggest that both sector-specific and macroeconomic condition variables are significant in explaining the corporate sector liability dollarisation. Firms are found to match only partially the currency composition of their debt with their income streams making them potentially vulnerable to negative balance sheet affects of real exchange rate depreciation shocks.



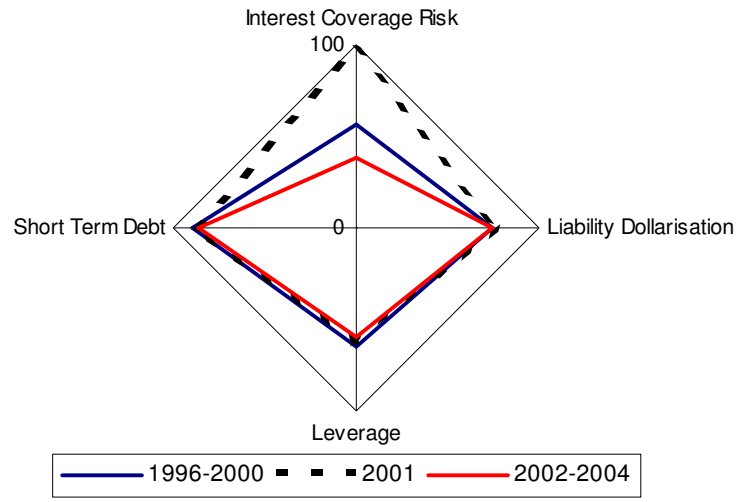
II.5. Corporate Sector Vulnerabilities and the Post-Crisis Adjustment

The analysis so for suggests that the non-financial firms in Turkey has been heavily exposed almost all of the basic balance sheet risks. The corporate sector appears to be excessively leveraged with relatively lower asset tangibility creating also a credit risk for the lenders (basically banks). The figures for the maturity and currency composition of the corporate sector debt show that firms rely heavily on foreign currency denominated and short-term debt instruments in Turkey. Such a liability composition makes firms vulnerable to both exchange rate and interest rate shocks through currency and maturity mismatches. Interest rate increases may potentially lead to a rollover risk and a decline in the net worth of the firms with higher short-term debt magnifying the conventional interest rate channel as postulated by the *financial accelerator* mechanism (Bernanke, Gertler and Gilcrist, 1999). Real exchange rate depreciations, whilst can potentially make exporting firms more competitive, can negatively affect the balance sheets of firms that do not produce tradable goods and thus can not hedge against exchange rate risks (Aghion, Bacchetta and Banerjee, 2001). The results by Kesriyeli *et al.* (2005), indeed, suggest that firms in Turkey match only partially the currency composition of their debt with their income streams making them vulnerable to negative balance sheet affects of

real exchange rate depreciation shocks. The high level of leverage ratios (or, the relatively higher debt-equity ratios reflecting a capital structure mismatch) in Turkey during the period can be expected to be an amplifying factor for the financial vulnerability arising from currency and maturity mismatches.

Consistent with the recent balance sheet approach to financial crisis, the fragilities of the corporate sector are found to be crucially important in triggering and determining the output cost of the 2001 crisis in Turkey (Roubini and Setser, 2004; Koğar and Özmen, 2005; and Keller and Lane, 2005). In this context we consider the developments in the basic balance sheet items that potentially reflects fragility before, during and after the 2001 financial crisis. The diamond-shaped chart plotted in Figure 13 summarises the LRs, interest coverage risk ratio (ICRR = 100/ICR), liability dollarisation (FXD/TD) and short-term debt (Short Term Debt/Total Debt) ratios (all are in percentage form) as indicators for manufacturing firms fragility during 1996-2004.[18]

Figure 13. Corporate Sector Vulnerabilities



[18] The ratios for the other non-financial firms showed a simmilar pattern with those for the manufacturing industry firms, therefore not plotted to save the space.

The interest coverage risk increased sharply with the financial crisis of 2001 owing both to the high leverage ratios and the jump in the interest rates. The risk decreased sharply after 2001 even much below to the 1996-2000 average with the decline in nominal and real interest rates. The leverage ratios improved only slightly during 2002-2004 compared to the earlier periods. The major improvement in the LRs was observed in 2004 as discussed earlier in the context of Figure 2. Liability dollarisation and short-term debt maturity, however, tend to be persistent even after the 2001 crisis making firms still extremely exposed to currency and interest rate risks. The monetary policy credibility with price stability and better macroeconomic stance after the 2001 crisis has been influential in reducing the LRs and ICRR and thus the interest rate and debt rollover risks considerably. Currency composition of debt and its maturity which are potentially sourced from the inertia of liability dollarisation and the relatively lower level of financial intermediation, respectively, however still remain as important sources of risk for the non-financial firms in Turkey.

III.1. Domestic Public Debt Finance and Financial Crowding-Out

A well-developed government securities market is often considered as helpful for the development of a corporate bond market as it can provide the necessary market infrastructure and investor base along with a reliable benchmark yield curve (IMF, 2005a,b). Government bonds and securities, especially those with short maturities, provide liquidity services and can be used as financial collateral. As Woodford (1990) and Holmstorm and Tirole (1998) convincingly show government debt as net wealth may thus crowd-in private investment by relaxing liquidity constraint in non-Ricardian economies with imperfect financial intermediation. However, these beneficial effects of the government debt finance instruments may not be invariant to financial depth and to the debt level (thus the sustainability) and the through which public sector borrows. High levels of government borrowing from domestic markets may drain limited sources for investment. The impact of such a financial crowding out might be more severe for bank dependent firms when the public heavily borrows from the commercial banks.[19] In an

[19] Financial deepening and banking system development can potentially limit the crowding out affect (Caballero and Krishnamurthy, 2004). However, as Kuttner and Lown (1999) shows, bank holdings of

environment where financial markets are relatively shallow, over-barrowing by the public sector may easily crowd out private sector activity as substantially large shares of public debt in the domestic financial system may reduce the overall liquidity as a result of increasing the country risk premium and thus reducing capital inflows (Caballero and Krishnamurthy, 2004). In such a case, fiscal contractions can be expansionary as they alleviate the credit constraint of firms.

Considering the overall benefits and costs of the government domestic debt finance, it may be argued that there is an endogenous threshold beyond which an increase of it may cause financial crowding out. The threshold is expected to increase with financial deepening, the development of a corporate sector bond market, better governance and sound macroeconomic policy stance. Consistent with the recent "debt intolerance" arguments (Reinhart, Rogoff, and Savastano, 2003), the threshold is expected to be lower in developing countries. Beyond the threshold level of the debt finance, expansionary fiscal policies can indeed be contractionary as it can lead to financial crowding out and even to a lower financial depth[20].

The low levels of financial intermediation and the banking system preference to finance corporate sector are already discussed as amongst the major causes of the firms' financial constraints in Turkey. Bank-based financial system in Turkey that is not deep compared to those of the countries with similar development levels (Figure 6 in Section II.3), appears to prefer to finance public deficits with its rather limited sources. Relatively low share of bank loans in liabilities of corporate sector may be attributed to financial crowding out of government debt finance via the commercial banking system in Turkey.

In Turkey, high and persistent fiscal deficits have often been interpreted as one of the major sources of macroeconomic instability and chronic inflation sustained for more than three decades. Before the financial crisis of 2001, the share of the public debt in GDP was not very high with total debt (external and domestic) reaching just around 50%

public debt tend to displace lending to the non-bank private sector even in a country like the US with well developed financial markets.

[20]This can be interpreted as being perfectly consistent with the "expansionary fiscal contractions" arguments in the literature. See Giavazzi *et al*., 2000 for a survey and Favero and Giavazzi, 2004 and Özatay, 2005 for the Brazilian and Turkish evidence, respectively.

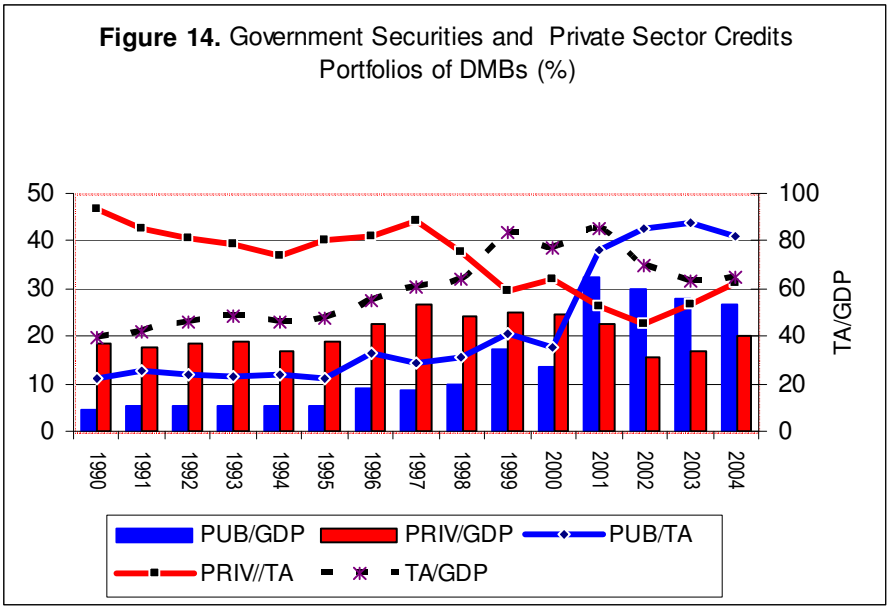
in 2000[21]. However, the basic problem has been its mode of financing. After the financial liberalization programme of 1980, financing domestic debt via deposit money banks (DMBs) has become the major mode, especially after the mid-1980s. During the period, DMBs absorbed around 80-90% of the Treasury cash security issuances in the primary market. Given the relatively lower level of financial depth, the growth of the public debt and the consequent heavier reliance on domestic debt finance through the banks after the late 1990s have yielded high real interest rates and extremely short debt maturities, thus has led to an interest payments explosion[22].

Figure 14 plots the shares of government securities (PUB/TA) and credits to private sector (PRIV/TA) in total assets (TA) of deposit money banks (DMBs) in Turkey during 1990-2004. The figure plots also the ratios of the DMBs government securities (PUB/GDP), private sector credits (PRIV/GDP) and total assets (TA/GDP) to GDP during the period. Note that, the substantial rise in the government securities share in 2001 is due to the fiscal cost of the financial crisis arising from government contingent liabilities and bank bail outs.

[21] With the 2001 financial crisis, however, public debt increased sharply due to the public sector contingent liabilities and the realisation of the fragilities of the banking system under government bailout guarantees as prospective public sector deficits (Koğar and Özmen, 2006). The values for the total public debt stock (domestic debt) as a percent of GDP were 102 (69) in 2001, 90 (55) in 2002, 80 (55) in 2003 and 75 (53) in 2004.

[22] Interest payments on domestic debt (as a percent of GDP) increased from 2.4 in 1990 and to 10.6 in 1998 and to 15 in 2000. After the crises it reached 23 per cent of GDP by the end of 2001 and gradually declining thereafter with around 19 % in 2002, 16 % in 2003 and 13 % in 2004. See Özatay (1997) and Özmen and Koğar (1998) for the earlier studies on the Turkish public sector deficits finance before the crisis. Özatay and Sak (2003) and Koğar and Özmen (2006) are among the studies discussing the role of the mode of the domestic debt finance in triggerring the financial crisis of 2001.

Figure 14. Government Securities and Private Sector Credits Portfolios of DMBs (%)



Source: CBRT

By definition, over-borrowing of the public sector is expected to financially crowd out private sector credit if it is not accommodated with a corresponding growth of banking system assets. From the figure, it may be inferred that, the government borrowing from the commercial banking system helped indeed financial deepening until the mid 1990s. This may be plausible given the fact that the government borrowing from DMBs was relatively moderate and the monetary policy stance was largely accommodative with no effective control on the growth of the monetary aggregates during the period. This is indeed consistent with the view that public debt finance provides liquidity and thus can crowd in private sector investment by relaxing the liquidity constraint under market imperfections (Woodford, 1990 and Holmstorm and Tirole, 1998). However, the threshold level of domestic debt finance beyond which it leads to crowding out appears to be somewhat reached after the mid 1990s. The heavier reliance on the debt finance through the banks with the growth of public debt has begun to severely crowd out private credits by the late 1990s. After 1999, the banking system assets as a percent of GDP tend to remain stagnant (even decline after the crisis) despite substantial increase in government borrowing.[23] The Turkish commercial banking system

[23] This is consistent with the view that, "continuously large public sector borrowing from the domestic banking sector can have substantial adverse implications for financial development" (Hauner, 2006, p. 3).

appears to allocate around 40% of its assets to public debt finance during the 2000s.[24] Despite the severe fiscal contractions and a credible monetary policy stance with substantially decreased inflation rates after the 2001 crisis, the fiscal dominance on the commercial banking system tends to be persistent. This is a crucially important policy issue for sustainable growth and financial stability since the domestic debt finance through the DMBs not only creates a direct fragility linkage between the balance sheets of the public and banking sectors but also leads non-financial corporate sector to be severely bank credit constrained (and thus financially constrained in the absence of corporate sector bond markets) due to the financial crowding out.

III.2. Financial Asset Holdings of Non-Financial Firms under Macroeconomic Uncertainty

Non-financial firms hold financial assets including government securities to hedge themselves against liquidity and interest rate risks and maturity mismatches.[25] In the conventional Modigliani and Miller (1958) world with perfect complete markets firms can raise funds instantaneously to finance their profitable projects and thus they may have no uncertainty induced precautionary demand for liquidity. However, as Holmstorm and Tirole (2000) argue, the presence of credit rationing, informational constraints and moral hazard may increase a demand for liquidity. The most liquid financial asset in the firms' portfolio is their cash balances the demand for which can be explained by the

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The decline in the total bank assets to GDP ratio during the 2000s supports also the argument that "rising share of public debt to private assets … reduces financial depth" (Caballero and Krishnamurthy, 2004, p. 1)

[24] This is, indeed, an extremely high ratio when compared internationally. The Turkish experience appears to be an outlier according to the figures reported in Sy (2005), Hauner (2006) and Hanson (2003). Sy (2005, Table 1) reports the 2003 values of the shares of government securities in total banking system assets for a number of developing and industrial countries. The mean share for the 24 country sample is 13% and the Turkish banking system has the highest government securities ratio (37%) representing an outlier (along with India and Indonesia with the shares 32% and 31%, respectively). In the same vein, Hauner (2006, Table A1) reports the 2001-2003 average shares of the banks' credits to public sector in their total credits for a sample of 75 developing countries. Accordingly, the credits the public sector constitute around 65% of total bank credits in Turkey representing one of the highest when compared internationally. According to Hanson (2003) Turkey appears to have the highest ratio of banking system net government credit to deposits amongst 25 developing countries with the largest banking systems.

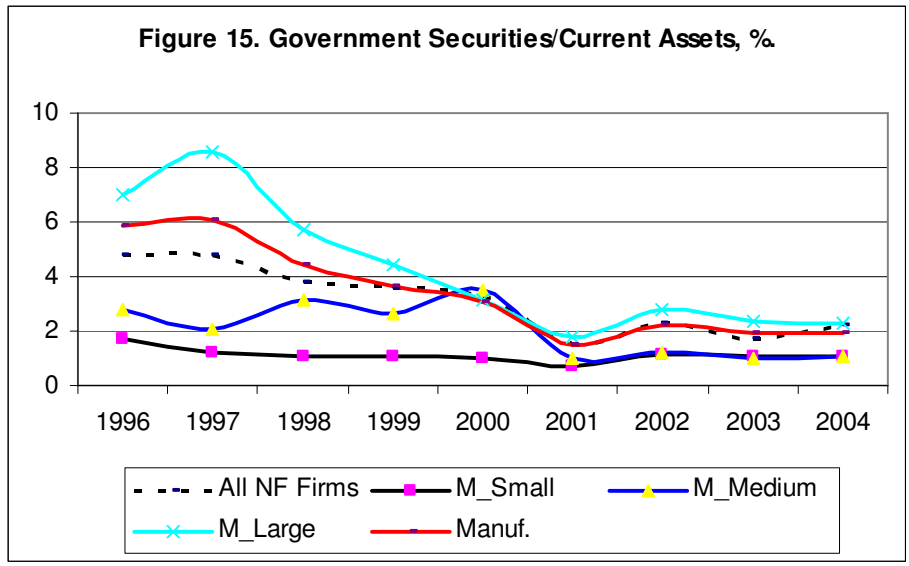
[25] Non-financial corporate sector firms hold substantial amounts of liquid financial assets in many countries (Dittmar *et al*., 2003 and IMF, 2006). According to IMF (2006), the recent acceleration of the liquid financial asset holdings of the firms in the G-/ countries is one of the striking changes in the global financial landscape. According to IMF (2006, p.135), since the early 2000s, "companies in many industrial countries have moved from their traditional position of borrowing funds to finance their capital expenditures to running financial surpluses that they are now lending to other sectors of the economy".

conventional transactions (Tobin, 1958) and precautionary (Miller and Orr, 1966) motives. Firms' cash balances, in this context, reduce transactions costs and provide a buffer to absorb adverse shocks (Keynes, 1936). Not only cash balances but also cash-like liquid assets including interest bearing bank deposits and short-term securities can provide a financial buffer to absorb unexpected changes in transactions and investment opportunities. Higher uncertainty sourced by macroeconomic instability may increase the demand for financial assets instead of investing these resources into long-term investment projects. In this context, the firms' demand for financial assets in general may be considered as due to their transactions/precautionary-cum-speculative motives.[26]

Figures 15 and 16 plot the shares of government securities and total financial assets (bank deposits, government securities and repurchase agreements) in current assets during 1996-2004, respectively.[27] The shares of government securities (GS) and financial assets (FA) tend to increase with firm size in manufacturing industry. The firms' holding of government securities tend to decline gradually during the period until the 2001 financial crisis. After the crisis, the share of government securities in current assets appears to be remained stable at relatively lower levels. The firms' holdings of financial assets, on the other hand, tend to be stable during the whole period. Especially large sized manufacturing firms invest more heavily in financial assets.

[26] There is now a growing body of theoretical and empirical literature attempting to explain non-financial firms demand for financial assets and liquidity. The recent contributions include Opler *et al.* (1999), Holmstorm and Tirole (2000), Dittmar *et al.* (2003), Almeida *et al.* (2004), Özkan and Özkan (2004), IMF (2006) and Baum *et al*. (2006). Kaplan *et al.* (2006) provide a recent survey of the literature and an empirical application to the Turkish case.

[27] The share of current assets in total assets typically constitutes around a half of the total assets with exhibiting negligible variation across firm groups and time periods. Therefore, dividing the numbers in Figures 15 and 16 by two gives a broad measure proximating the shares in terms of total assets.

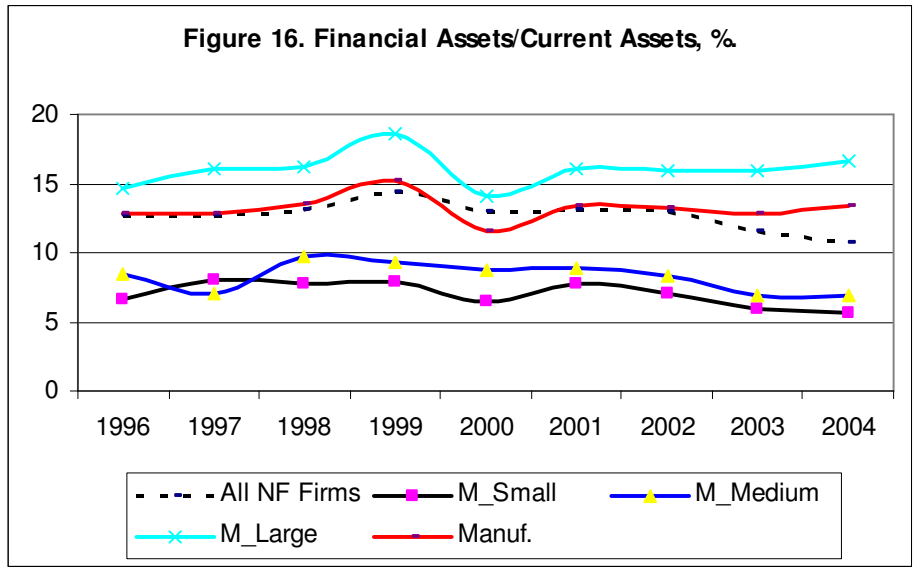


The FA holding of the manufacturing firms in Turkey is not low when compared internationally.[28] However, the firms' holdings of cash (typically less than 0.5% of their current assets) have been minimal during the period. Under chronic high inflation rates, economic agents, including non-financial firms, can be expected to minimise their cash (and non-interest bearing demand deposits) holdings.[29] A sustained severe inflationary process in a country may not only preclude domestic fiat money demanded as a store of value, but may also reduce its role as a medium of exchange with the availability of alternative liquid financial assets which can be used as an inflation hedge whilst providing liquidity to a certain extent. This may plausibly explain the minimal holdings

[28] For example, Baum *et al.* (2006) report that US and Germany corporations hold around 10% and 6% of their total assets in liquid financial assets (cash and marketable securities), respectively. Dittmar *et al.* (2003) consider a cross-section of firms from 45 countries and find that the median ratio of liquid financial assets to net assets (total assets minus cash and marketable securities) is 6.6 %. The median liquid financial asset ratio reported by Dittmar *et al.* (2003) for some selected countries are as follows: 3.1% (Chile), 6.4% (US), 7.3% (Brasil), 7.4% (Germany), 8.1% (UK), 11.1% (France), 13.4% (Turkey), 15.5% (Japan), and 20.9% (Israel). In the same vein, Himmelberg *et al.* (2003) consider a cross-section of firms from 27 European countries and find that the mean (median) ratio of liquid financial assets to net assets is 18.0 % (6.4%). The data sets by Dittmar *et al.* (2003) and Himmelberg *et al.* (2003) both show that the liquid financial asset ratio varies widely across (and within) countries. This suggest that there may be no optimal liquidity ratio for nonfinancial firms invariant to industry/firm specific characteristics and the prevailing policy stance in the country. A companion paper, Kaplan, Özmen and Yalçın (2006), empirically investigate the causes and consequences of the financial asset holdings of the non-financial firms in Turkey.

[29] There is no data for the firms' holding of demand deposits with banks. However, it may be plausably expected that the share of domestic currency denominated demand deposits is minimal as for the cash holdings under the severe inflationary period.

of cash by the firms. However, the fact that the FA holdings of the Turkish firms is roughly comparable with those for the countries enjoying much lower inflation and stronger macroeconomic policy stance needs a further explanation.



The liability structures of the firms, including maturity and currency composition of their debt, are among the important determinants of their demand for liquid assets. A short-term debt dominated structure forces the firm to be more liquid whilst long-term debt allows it to be more flexible against liquidity shocks. A firm whose liabilities is made up of mainly foreign currency denominated short-term debt and whose earnings are mainly in domestic currency tends to liquidate FX assets against a currency risk. As already discussed in the earlier sections, the bulk of the corporate sector firms' debt in Turkey have been short term and denominated in foreign currency that make firms vulnerable against shocks. The opportunity costs of remaining liquid by holding TL cash and TL denominated demand deposits have been very high in the face of the sustained high inflation rates until very recently. Under these conditions, firms may need to hold alternative liquid financial assets to avoid underlying risks.

Given the fact that the maturity of financial contracts, including government securities and banking system time deposits, has been extremely short in Turkey (Koğar and Özmen, 2006), non-financial firms tend to hold interest bearing FA also for satisfying their liquidity needs. The Turkish banking system is heavily dollarised with FX

denominated deposits constituting around a half of the total deposits during the period (Yılmaz, 2005 and Akıncı, Barlas-Özer and Usta, 2006). Consequently, non-financial firms in Turkey have been able to hedge themselves against currency risk to a certain extent and to remain relatively liquid by holding FX deposits with the banking system.

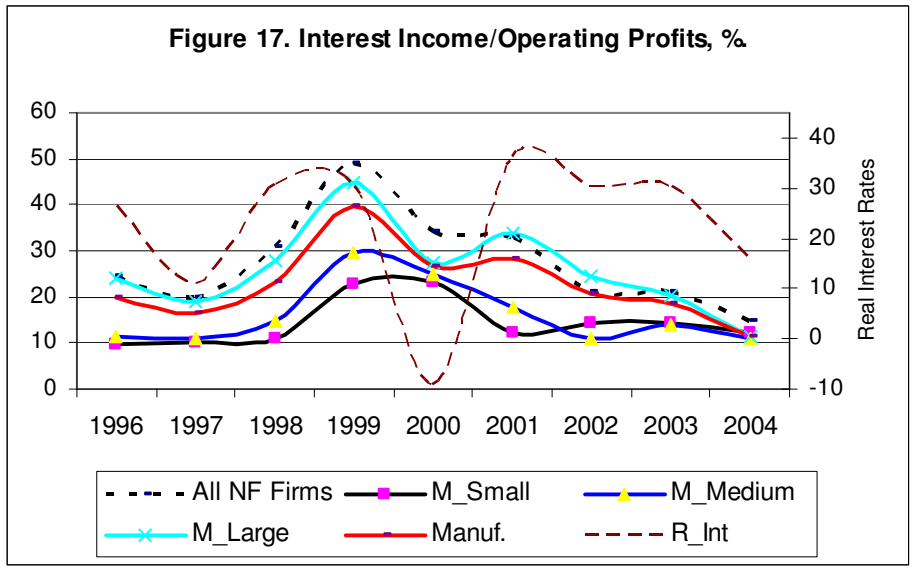
The firms' demand for liquid assets depends also on the degree of financial constraints that they face up with (Opler *et al.* 1999 and Özkan and Özkan, 2004). Financially more constrained firms are expected to hold more liquid assets for precautionary reasons as it may be more difficult for them to borrow when needed. The degree of a financial constraint may decrease with firm size as large firms can have access to capital markets and face a lower degree of asymmetric information problems (Myers and Majluf, 1984). Consequently, we may expect that small firms tend to hold more liquid assets as a financial buffer to hedge against negative shocks (the precautionary-cum-transactions motive). However, the Turkish evidence suggests that the FA holdings tend to increase with firm size in manufacturing industry which is not consistent with these arguments (Figure 16). This contrasting evidence may, however, be justified if FA are viewed not only as financial buffers against liquidity shocks but also as a portfolio choice substituting fixed investments.

Non-financial firms face a choice between allocating their resources into fixed and financial investments (Vickers, 1987 and Holmstorm and Tirole, 2000). By providing the necessary liquidity services due to the transactions-cum-precautionary motive, liquid financial assets can be complementary to fixed investments. In this context, the holding of liquid financial assets including government securities can crowd in fixed investments (Woodford, 1990 and Holmstorm and Tirole, 1998). However, under macroeconomic instability and thus high uncertainty, non-financial firms may prefer to defer fixed investments and hold financial assets also for their speculative motive. In such a case, financial assets and fixed investments may become substitutes leading the former to crowd out the latter.[30,31]

[30] Such a financial crowding-out behaviour under uncertainty is neatly propsed by Vickers (1987): "Money may be held when the uncertainties surrounding economic prospects make it desirable to defer the commitment of resources to real investment and the pursuit of real economic activities. To the extent that this is so, available real resources will not be utilized as fully as would othervise be possible" (p. 11). In the same vein, Ersel and Sak (1997) propose the notion of *uncertainty induced liquidity preference* to explain

The fact that large manufacturing firms hold substantially more (about the twice) financial assets than the small and medium sized firms in Turkey (Figure 16) is consistent with the view that firms may hold financial assets not only for their liquidity services but also for high return from financial assets under macroeconomic uncertainty. This speculative motive appears to be the case especially for large sized manufacturing firms. Small and medium sized manufacturing firms, which are more financially constrained, tend to be relatively less flexible for holding financial assets for interest income apart from their liquidity.

Figure 17. Interest Income/Operating Profits, %.



corporate sector holding of liquid financial assets including government securities and FX assets as a financial buffer under conditions of enhanced uncertainty. Accordingly, the "distribution of the working capital between production related assets and financial assets depends upon perceived risks over the production cycle of the corporation" (p.4). The financial crowding out, according to Ersel and Sak (1997), is temporary as firms transfer the accumulated financial assets to finance real investments to the next production cycle. The empirical results by Ersel and Sak (1997) support the *uncertainty induced liquidity preference* hypothesis for the Turkish data and suggest that non-financial firms holding of government securities not only cushioned the impact of the 1994 crisis but also allowed them to have a faster post-crisis recovery.

[31] The argument about the crowding out affect of the financial assets holdings of non-financial firms may also be relevant for the recent US experience. According to IMF (2006, p. 136), the recent acceleration of the corporate sector holdings of financial assets "has offset one-half of the increase in government and household net borrowing, thereby helping to mitigate the impact on the external deficit".

Figure 17 plots the ratio of interest income to operating profits of the non-financial firms during the period along with *ex ante* real interest rates (R_Int) on government securities.[32] Not surprisingly, the interest income ratio for all firm groups tends to follow a similar path with the real interest rates. Consistent with their financial assets holding behaviour as depicted by Figure 16, the interest income ratio appears to increase with firm size in manufacturing industry. During most of the period, their heavier investment on financial assets yielded large sized manufacturing firms to obtain substantial interest income reaching about 45% and 35% of their operating profits with the jump of the real interest rates in 1999 and 2001, respectively. The interest income ratios for all the firm groups tend to decline gradually after the 2001 financial crisis. This may plausibly interpreted as resulting from the decline in macroeconomic uncertainty and thus in the real interest rates with enhanced monetary policy credibility and better macroeconomic stance after the 2001 financial crisis.

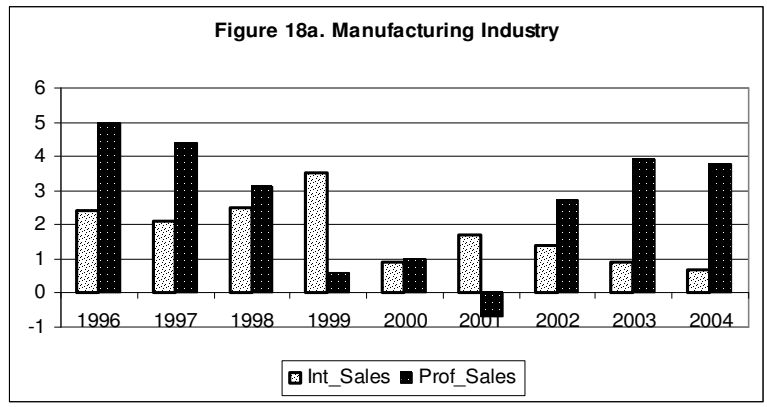
Figure 18 shows the ratios of interest income and net profits to net sales of the non-financial firms. From Figure 18a, it may be strikingly inferred that there was a structural change in the manufacturing industry income and profit generating activity behaviour after the 2001 financial crisis. Before the 2001 crisis, interest income appears to be the major source of manufacturing firms' profits. Prior to the crisis, the profit ratios of manufacturing firms had been gradually decreasing whilst their interest income had been on an increasing trend. After 2001, compared to the pre-crisis period, we observe an opposite path for the evolutions of interest income and profit ratios with a gradual decline in interest income while an increase in profit ratios. This observation is consistent with the view that income from real investments rather than that from financial asset holdings has become the major source of revenue for manufacturing firms as macroeconomic stability came into the picture during the post crisis period.

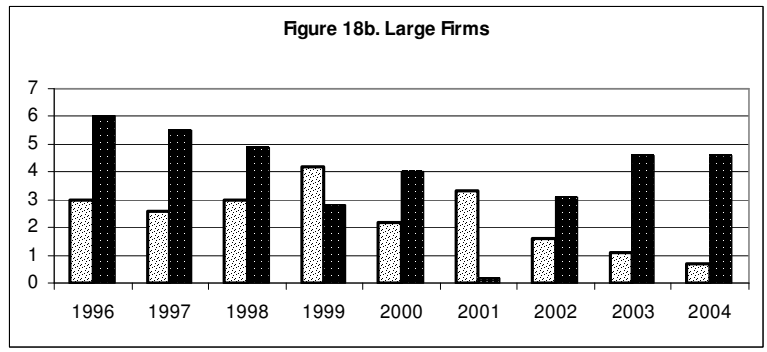
The profit and interest income ratios for the large sized manufacturing firms (Figure 18b) follow a similar path with those of the manufacturing industry in general suggesting that the latter is indeed dominated by the former. The substantial amount of interest

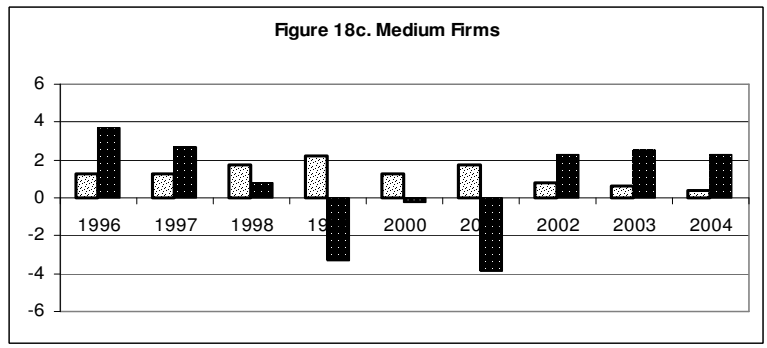
[32] It may be preferable to consider alternative measures such as net profits or profits before taxes. However, for some observations these alternative measures have negative values precluding a meaningful interpretation of the ratios based on them.

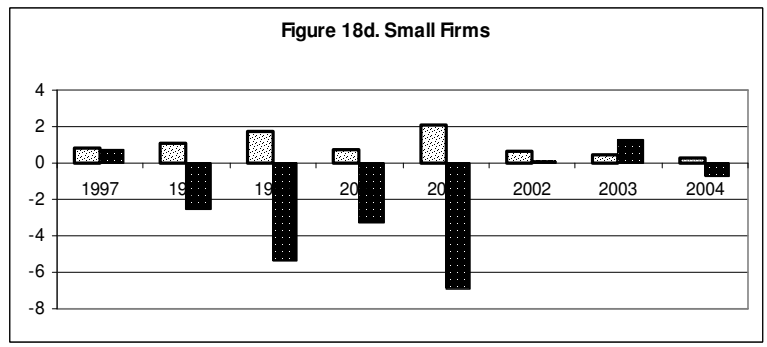
income obtained by large sized firms during the financial crisis of 2001 appears to be effective in muting the unfavourable output impacts of the crisis for these firms. Based on the corporations quoted at the Istanbul Stock Exchange, Ersel and Sak (1997) find that financial asset holdings of firms cushioned the impact of the 1994 crisis and enabled them to grow in 1995. Financial assets can be interpreted as to have a similar buffering role especially for large sized manufacturing firms also during the 2001 crisis. The financial asset holdings of small, and to a certain extend medium, sized manufacturing firms have been relatively modest (Figure 16) leading to their profitability basically determined by macroeconomic and firm/sector specific conditions. Small and medium sized manufacturing firms with rather limited financial flexibility can be expected to hold liquid financial assets mainly for transactions and precautionary purposes. Large sized firms, on the other hand, are more flexible in allocating their assets into financial and real investments. This flexibility allowed large firms to hold also speculative motive led financial assets potentially crowding out their real investments especially before the 2001 crisis.

Figure 18. Interest Income and Net Profits (% of Net Sales)









IV. Concluding Notes

The balance sheets of firms contain valuable information that enables us to assess potential vulnerabilities in the corporate sector and to understand the transmission mechanism through which macro policies including monetary policy transmit into financial and real activity of firms. One may expect that non-financial firms tend to adopt financial strategies through which they could survive in an environment of long lived macroeconomic instability, less developed financial market and institutions. In such an environment, non-financial firms in Turkey have been heavily exposed to balance sheet risks. Therefore, firms tended to avoid investing into capacity creation activity instead they preferred to invest heavily in financial assets over 1990s. Eventually, potential output of Turkey declined considerably in Turkey. We pay attention to some stylized facts that reflect the basic structure of the balance sheets of firms in this study.

Turkish firms can be considered as highly indebted on average even though they do not get finance directly from market by issuing bonds. In other words, contrary to financially developed countries, trade credits and credits from subsidiaries or parents constitute a very large portion of corporate sector's external finance. The share of bank loans in total liabilities in Turkey is almost the same that of other emerging markets that have a substantial amount of bond finance. This may imply that potential bank dependent firms which are generally made of small sized companies, are less likely to have access to bank finance in Turkey, that is, they are more financially constrained consistent with low degree of financial deepening in Turkey. In fact, the share of bank finance for small firms is lower than that of large and medium sized firms and the share of small firms declines further when economy contracts. In general, small firms rely heavily on trade credits especially during the recessions while large firms tend to use more bank loans and internal funds. Trade credits are expected to mute the fluctuations of small firms' activity especially in bad times. Extensive use of trade credits by small firms allows large firms as intermediary institutions. In fact, heavily investing in liquid assets, relatively easy access to bank finance and operating with high profit margins in relatively less competitive market conditions allow large firms to provide finance to their sub-contractors or small firms in trade activity in form of trade credit.

We observe a marked shift in the finance structure of corporate sector in Turkey after the crisis. All firms, predominantly large ones, tend to use more internal funds in financing their real activity after the 2001 crisis. Similarly, in the same period, especially small and medium sized firms invest more in tangible assets whose share in total assets in corporate sector on average is very low compared to that of other emerging and developed markets. The increase in the share of tangible assets of small and medium sized firms reaches that of large firms that has been historically higher in 2004.

The maturity structure across firms classified in terms of size has stayed stable over time. The maturity of debt is increasing with firm size as expected. The firms with high tangible ratios have high share of long term debt. In fact, we observe a gradual decline in the share of short term debt for small and medium sized firms as the shares of tangible assets increase in their balance sheets. Debt maturity of corporate sector in Turkey appears to be very short compared to those of emerging economies. This is believed to be stemmed mainly from macroeconomic instability reflected in form of high inflation and therefore Turkish corporate sector is more vulnerable to external shocks. Therefore, Turkish corporate sector tend to stay more liquid compared to countries with longer debt maturity even Turkey experiences high inflation during the period. One may easily notice the risk of default with this debt structure when look at interest coverage ratios that realized below 100 percent for small and medium sized firms in the 2001 crises. The postions of all firm groups have improved substantially after the crisis while the improvement is more considerable as firms get large. However, we observe a deteriorating trend in the interest coverage ratio for small firms in 2004.

The figures for the maturity and currency composition of the corporate sector debt show that firms rely heavily on foreign currency and short-term debt instruments in Turkey. Such a liability composition makes firms vulnerable to both exchange rate and interest rate shocks through currency and maturity mismatches. Interest rate increases can lead to a rollover risk and a decline in the net worth of the firms with higher short term debt magnifying the conventional interest rate channel as postulated by the financial accelerator mechanism. Real exchange rate depreciation, whilst it may potentially improve exporting firms more competitive, can negatively affect balance sheets of non-exporting firms.

Although in case of the lack of private bond market, government securities may be helpful in functioning of financial market by providing liquidity, the high level of government borrowing from domestic market tend to drain funds and thus crowd out private investment in Turkey. Bank dependent firms are expected to be severely affected from this structure that has been the main source of macroeconomic instability. However, the declining trend of budget deficits as a result of tight fiscal policy and the improvement in the macroeconomic conditions including substantial achievements towards price stability may be expected to contribute to the corporate sector in achieving a stronger balance sheet structure. This may, in turn, be expected to be enhancing macroeconomic stability and sustainable growth.

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